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Why Maintain a State Agricultural College?

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Why Maintain a State Agricultural College?

A paper read by William Edgar Simonds at an open meeting of the Connecticut State Grange, Hartford, Conn., Jan. 11, 1898.

A substantial citizen of Connecticut, the head of a manufacturing establishment, who averred with seeming candor that he had no prejudice in the matter, asked the substance of the above question of the present writer—in a letter.

The question is one proper to be put, no matter what the motive of the questioner. Public moneys are not to be expended except for good and sufficient reason—as a rule only for the public benefit. If there is no sufficient reason to justify the teaching of agriculture by a state institution it is time to close the doors of Storrs Agricultural College. If, on the other hand, a sufficient reason does exist it ought to be possible by searching to find it out. Let us enquire.

The question which bars the way at the very threshold of the inquiry is,—do those fundamental and organic principles which lie at the foundation of the American social order justify the expenditure of public moneys for the education—of *any* sort—of the people in general?

No one properly informed will doubt the competence of the jurist, Thomas M. Cooley, to answer that question. At page 84 of "Cooley on Taxation" it is said:

> "It may be safely declared that to bring a sound education within the reach of all the inhabitants has been a prime object of American government from the very first. It was declared by colonial legislation and has been reiterated in constitutional provisions to the present day. It has been regarded as the imperative duty of the government; and when question

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> has been made concerning it the question has related not to the existence of the duty but to its extent. But the question of extent is one of public policy and addresses itself to the legislature and the people, not to the courts."

This statement by Judge Cooley is a self-evident truth to Americans. Education—the education of each individual so far as is practicable—is a matter of the highest possible public concern. The perpetuity of our free institutions rests absolutely upon education generally diffused; republican institutions are not self-executory; there are Central and South American Republics which have most admirable constitutions and laws on paper which will always remain mere paper so long as their present educational conditions continue. Education is the soil out of which has grown our marvelous material and social efficiency. The control of education, even to forcing all the people to acquire it, and including the taxation of the whole community to furnish the means, is a power exercised by the state without question for hundreds of years. This exercise of a power absolutely requisite for the preservation of our free institutions, which has given justifying results—political, material and social —for centuries, and as to the propriety of which the people and the courts agree with substantial unanimity is something not now open to dispute.

But granting the proposition just laid down, it may seem still possible to urge that however sound and justifiable it may be to expend public moneys for that kind of education which is useful to men in all callings of life, as for instance, in the teaching of reading, writing and arithmetic, it does not follow that it is justifiable to expend public moneys for teaching a special kind of education, of direct and immediate use only to a special class of people, such, for instance, as the science and art of agriculture.

The last sentence in the quotation from Judge Cooley's remarks deals with precisely such an attempted discrimination as that. He says—"the question of extent (of education) is one of public policy and addresses itself to the legislature and the people, not to the courts," meaning that public moneys can properly and lawfully be expended for special education if the legislature sees fit so to order.

In examining other than superficially an attempted distinction of the kind just mentioned it is proper at the outset to inquire what education is, in its true essence, and why the body politic desires each individual to have it. There is a certain kind of basic education which is a practical necessity for every man in civilized society—that which comprehends reading, writing and arithmetic. Every man needs that much of education in order that he may transact the most ordinary kinds of business. But the public does not specially care to furnish a man with that much of education simply because it is of personal value to him. The public interest in a man's education is not a charitable thing; it is a matter of enlightened selfishness. The public only cares that a man shall have an education because the having of it by him inures to the public good. That education which the public cares for necessarily includes this primary sort of education and it may, therefore, be dismissed from further consideration as regards the question with which we are now concerned.

The present writer believes that education, in its real essence, consists in the acquirement of the habit of observation and study, and the habit of correct reasoning on what the mind perceives and what it conceives—to make which effective for most purposes needs to have added the capacity for clear and accurate expression. Incidentally, in the acquirement of an education, one may lay away a great store of facts, but that, after all, is only an incident. The body politic desires the individual to have education because reason indicates and experience demonstrates that the great majority of those who have it are—by reason of the resulting development of their understanding and intelligence—devoted to the maintenance of free institutions; they are apt to love order and justice and to give encouragement to improvement and enterprise.

Education is not, primarily and chiefly, the storing of the memory with facts. It is primarily and chiefly the improvement of man as a perceiving and reasoning machine. It is the improvement of the individual as a perceiving and reasoning machine, through education, at which the body politic aims.

We are now ready to ask whether the science and art of

agriculture present a field suitable and profitable for observation and study, with phenomena and questions fit for and deserving of the application of man's reasoning powers thereto. The question can be answered on the instant. The man who can name a better field for observation and study or he who can cite phenomena and questions which form better grist for a reasoner's mill will well deserve the title of an original discoverer.

The student of agriculture has a vast area of the whole kingdom of nature which not only invites but demands his observation and study, including the forecasting of the weather; the chemistry of widely differing soils, foods and plants under about all possible conditions of climate and temperature; the extremely subtle chemistry of cream setting and butter making; the physiology of plants and animals; irrigation and drainage with their effect on drought and moisture; the mystery of seed germination with the added mystery of growth to leaf, flower and fruit; determining which of the burrowing, creeping, walking and flying things are friends to agriculture and which are foes; the improvement of plants and animals through heredity, treatment and breeding; and so on and on. A catalogue of all the phenomena that a genuine student of agriculture must observe and study would be extensive indeed; and it is one of the plainest truths in the world that they furnish an unequalled grist for the application thereto of thought and reason, not only in their variety but in the value of the results, material and mental, possible to be obtained.

The vital purpose of education is the training and energizing of the faculties of observation and reason; and the study of agriculture is quite as well adapted to the attainment of that purpose as any other study whatsoever.

That proposition may have in it something of novelty for some persons, chiefly for the reason that education of the advanced sort, heretofore, has mainly centered in a study of Greek and Latin with some addition of language, logic, philosophy, physics, physical science, mathematics and modern languages.

The novelty of the proposition need not of itself distress any body. Certain of the physical sciences now have their acknowl-

edged places in the higher educational curriculum but it is not long ago that the ancient languages with the fringes just mentioned—but not including physical science—had the field all to themselves and flouted the notion of sharing that field. The very beginning of the change, as regards the whole civilized world, seems to have been in 1727 when Thomas Hollis, a London merchant, amidst jeers and sneers from the learned world of that day, persisted in his design to endow Harvard College with a "professorship of mathematics and physical science." The establishment of this professorship at Harvard made no particular impression on the college world.

The next step in a similar direction—this time distinctively recognizing industrialism—was taken in 1816. Then Harvard College induced by the liberality of Count Rumford (originally Benjamin Thompson of Woburn, Mass.,) established a "new institution and professorship in order to teach by regular courses of academical and public lectures, accompained by proper experiments, the utility of the physical and mathematical sciences and for the extension of the industry, prosperity and happiness and the well-being of society." The beginnings at Harvard under the Rumford professorship were not extensive; they consisted of four lectures a year; in 1827 the professor resigned and the chair remained unfilled for seven years. The first substantial addition of physical science to a college curriculum seems to have been made by the University of Virginia from 1818 to 1825 under Jefferson's direct effort and as a result, in substantial measure, of what George Washington had said and written. The example set by this institution seems to have created a general demand for the teaching of those branches of learning in American colleges and it gradually came about. But practically it is only within the last seventy-five years that physical sciences have been permitted within the charmed circle which furnishes the higher education.

The idea of getting the essential results of a genuine higher education by the teaching of agriculture—upon a good common school foundation—supplemented by economics, American political history and thorough drill in the use of the English language, is far less novel to-day than was the idea of getting

it by teaching physical science seventy-five years ago. Therefore nobody needs to be disturbed by the proposition by reason of its novelty.

The field of phenomena and fact offered by agriculture is broader and richer than that offered by any other single field whatsoever and it is a necessary consequence that when we have—as we shall have whenever the demand therefor is made effective—teachers as competent to instruct in that field as those now readily to be had for other fields, the results of the teaching of agriculture will be correspondingly rich and extensive. The possibilities of the case are, by no means to be judged by what has been accomplished at the very beginning of the enterprise.

In view of the great field of research and discovery there is in agriculture, the vast variety of phenomena it does and must continue to present for reasoning and experiment, and the value of the results both material and mental, possible to be obtained, it is presumptuous for the friend of the teaching of any other thing to assume or claim that there is any other field better fitted for that improvement of man as a perceiving and reasoning machine which is the essential aim of education, so far as the public interest therein is concerned. It would be well for those who doubt the soundness of this proposition to review the investigations made by Lawes and Gilbert at Rothamsted during the last half century and their mental and material results; and a glance at Edward Atkinson's letter on the "Marsden Process" in the "Country Gentleman" of Dec. 17, 1897, might be of value.

Possibly what has already been said is sufficient to justify the expenditure of public moneys for the teaching of the science and art of agriculture but there are special reasons not yet mentioned which justify it.

Agriculture is the great basic industry of the world. Most other industries are based and built upon it. Those industries which are not so based and built are yet dependent on it for their existence and prosperity. With the exception of the products of the fisheries, and such game as comes from remaining areas of wildness, all our food is the product of agriculture.

With the slight exception of such furs, feathers, and skins as are taken from wild creatures, all our clothing is made from the products of agriculture. Food and clothing are the two great primal human necessities and they are the products of agriculture. Civilization is not possible without civilized agriculture. And no other industry can exist, in even a decent degree of effectiveness and proficiency, in the absence of agriculture.

Thoughtful men, soberly mindful of the public welfare, have always recognized these truths. Washington showed his appreciation of them in his last message when he said:

> "It will not be doubted that with reference either to individual or national welfare agriculture is a prime necessity. In proportion as nations advance in population and other circumstances of maturity this fact becomes more apparent and renders cultivation of the soil more and more the object of public patronage. Institutions for promoting it grow up supported by the public purse, and to what other object can it be more dedicated with greater propriety?"

And George William Curtis said:

> "The test of national welfare is the intelligence and prosperity of the farmer."

Quotations to the same purport might be multiplied almost indefinitely but the words of these two wise and noble men suffice.

Let some comparison be instituted between manufactures and agriculture, both as regards the United States and the state of Connecticut. By the census of 1890 (Census Abstract, p. 141), there were 4,712,622 persons in the United States engaged in "manufacturing and mechanical industries," a number which needs to be diminished one-half for the purposes of the present comparison (see page civ.–cvi., population vol., part 2,) excluding 59,692 bakers, 205,028 blacksmiths, 105,747 shoe repairers, 45,988 builders and contractors, 104,951 butchers, 11,148 butter and cheese makers, 611,025 carpenters and joiners, 12,536 watch repairers, 494,696 dressmakers and milliners, 4,543 locksmiths and bell hangers, 1,176 hair workers, 158,701 masons, 218,988 painters and glaziers, 12,295 paper hangers, 19,962 photographers, 38,932 plasterers, 28,206 plumbers, 7,023 roofers and slaters, 181,649 tailors and 12,713 upholsterers—in all 2,334,999 to be deducted, leaving the number of people engaged in man-

ufactures 2,377,623, while the number engaged in agriculture (Census Abstract, p. 78) was (laborers, 3,004,061; apiarists, 1,733; dairy men and women, 17,895; farmers, planters and overseers, 5,281,557; gardeners, florists, nurserymen, etc., 72,-601; stockraisers, herders and drovers, 70,729; other agricultural pursuits, 17,147; butter and cheese makers, 11,148); 8,476,911. And while the capital invested in "manufacturing and mechanical industries" (Census Abstract, p. 141), including twice the number of people actually engaged in manufactures, was 6,500 millions of dollars ($6,525,156,486), that invested in agriculture (Census Abstract, p. 99) was some 16,000 millions ($15,982,267,689).

These ratios do not obtain in Connecticut, but nevertheless the Connecticut ratios are not what they are generally supposed to be. The census of 1890 (Census Abstract, p. 99) gives Connecticut farm valuations (land, fences and buildings, $95,000,-595; implements and machines, $3,075,490; live stock, $9,974,-618;) as $108,050,708, and the capital invested in "manufacturing and mechanical industries" (Census Abstract, p. 141) as $227,004,496. Eliminating, for reasons already stated, one-half of this as investment in "mechanical industries," other than "manufacturing industries," leaves the capital invested in manufactures in Connecticut little if any exceeding that invested in agriculture, a position that is strengthened by the Connecticut grand list for October 1, 1896, which gives "2,474,213 acres of land," valued at $63,557,617, and "11,635 mills, distilleries, manufactories and investment in mechanical and manufacturing operations," valued at $82,224,663. Increase both these items by the well-known margin between tax-list values and those which owners expect to realize under favorable conditions; decrease the larger sum by the amount which belongs to "mechanical operations," as distinguished from "manufacturing operations," and the result will well accord with that deduced as above from the census reports.

The census of 1890 (Census Abstract, p. 76,) gives the number of people in Connecticut engaged in agriculture, fisheries and mining as 48,676. It elsewhere appears that something over 3,000 are to be credited to fisheries and almost none to

mining; so that Connecticut stands credited with upwards of 45,000 agriculturists, a figure that needs to be increased by adding bee-keepers, dairymen and dairywomen, cheese and butter makers, gardeners, florists, nurserymen, vine growers, stock raisers, herders and drovers.

The 1890 census (Census Abstract, p. 141,) gives the number of people in Connecticut engaged in "manufacturing and mechanical industries" as 149,139, of whom (Pop. vol., part 2, p. cx.,) 35,804 are women. When this 149,139 is cut in half, to eliminate those engaged in "mechanical industries" which are not "manufacturing industries," and about one-third of the remainder are dropped to eliminate the children, the number of people engaged in manufactures in Connecticut exceeds little or not at all the number of people engaged in agriculture.

But notwithstanding the vast preponderance of agriculture over manufactures in the United States at large, both in capital and workers, and the substantial equality of the two in Connecticut, the earnings of manufacturing and other mechanical workers are in vastly the larger ratio.

While some four and two-thirds millions of people engaged throughout the United States in "manufacturing and mechanical industries," with a capital of 6,500 millions of dollars (Census Abstract, p. 141,) turned their labor into ($9,372,437,283 gross product, less $5,162,044,076 cost of materials=$4,165,393,207 net) some 4,000 millions of dollars of product, on the other hand some eight and a half millions of people engaged throughout the United States in agriculture, with a capital of some 16,000 millions of dollars (Census Abstract, p. 99), only realized ($2,460,107,454 farm products, less fertilizers $38,469,598=$2,421,637,856 net) some 2,500 millions of dollars which, at the manufacturing ratio—even with per capita equality of capital—would have been three times as much, or $7,513,793,276. And the returns for manufacturing labor in Connecticut are quite as much above those for agricultural labor as they are throughout the United States at large (Census Abstract, p. 99, 141).

If these small agricultural earnings, taken with the fact that agriculture is the great necessary and basic industry, do not

constitute a justification for the fostering of agriculture by the expenditure of public moneys for the teaching of its art and science, then evidence and argument and reason are but vanity and vexation of spirit.

If any man is inclined to say or to think that Connecticut can afford to neglect her agricultural interests in view of the wealth and prosperity which have come to her through manufactures, it will be better than well enough to remember that manufactures can never in the future be, relatively to other industries, what they have been in the past. The capacity for the production of manufactures is almost unlimited, both here and elsewhere, but there is no possibility of a corresponding increase of a market for those manufactures. The present manufacturing capacity of the world is fully equal to its consuming capacity. Meanwhile other states in America, and foreign nations as well, are developing manufacturing industries with a rapidity which surely foretells a competition for Connecticut amounting to a limitation in the near future if not to distinct repression. The decline of the cotton manufactures of New England has already begun; that of heavy manufactures of iron will soon follow.

Along with the general development of manufactures and commerce throughout the world, economic and social relations grow increasingly complex and delicate; disturbances in those relations will in the future be of more frequent occurrence than heretofore; their influence will be more widely spread, and their disastrous effects more lasting.

Agriculture, as a gainful industry, has an element of stability which will be lacking in the manufacturing industry of the future. The area of cultivable land is a fixed quantity while the population of the earth, under improved and improving hygienic conditions, is increasing at a rate unequalled in the world's history.

All these people must have food wrung from the bosom of mother earth and no man can add an acre of surface to the globe. It will be very strange if there are not periods within the next half century when that stability characteristic of agriculture proves the mainstay of communities ordinarily depend-

ent in large part on manufactures. Neither Connecticut nor any other manufacturing state can afford to neglect its agriculture.

After years of consideration and debate, Congress, in 1862, entered deliberately upon the policy of fostering agriculture by providing endowments for its teaching. In 1887 and 1890 Congress added to those endowments and the states generally have with equal deliberation availed themselves of the aid thus proffered. The condition of the development of this congressional enterprise down to 1896, is indicated, with some omissions, in a little pamphlet issued by the United States Department of Agriculture entitled "Statistics of Agricultural Colleges and Experiment Stations, 1896."

This pamphlet gives the following list of State Institutions enjoying the Federal grants under the Acts of Congress of July 2, 1862 and August 30, 1890.

ALABAMA.—State Agricultural and Mechanical College, (Alabama Polytechnical Institute) at Auburn; State Normal and Industrial School, at Normal.

ARIZONA.—University of Arizona, at Tucson.

ARKANSAS.—Arkansas Industrial University, at Fayetteville.

CALIFORNIA.—University of California, at Berkeley.

COLORADO.—The State Agricultural College, at Fort Collins.

CONNECTICUT.—Storrs Agricultural College, at Storrs.

DELAWARE.—Delaware College, at Newark; State College for Colored Students, at Dover.

FLORIDA.—Florida Agricultural College, at Lake City; Florida State Normal and Industrial College, at Tallahassee.

GEORGIA.—Georgia State College of Agriculture and Mechanic Arts, at Athens; Georgia State Industrial College, at College.

IDAHO.—University of Idaho, at Moscow.

ILLINOIS.—University of Illinois, at Urbana.

INDIANA.—Purdue University, at Lafayette.

IOWA.—Iowa State College of Agriculture and Mechanic Arts, at Ames.

KANSAS.—Kansas State Agricultural College, at Manhattan.

KENTUCKY.—Agricultural and Mechanical College of Kentucky, at Lexington; State Normal School for Colored Persons, at Frankfort.

LOUISIANA.—Louisiana State University and Agricultural and Mechanical College, at Baton Rouge; Southern University and Agricultural and Mechanical College, at New Orleans.

MAINE.—Maine State College of Agriculture and the Mechanic Arts, at Orono.

MARYLAND.—Maryland Agricultural College, at College Park.

MASSACHUSETTS.—Massachusetts Agricultural College, at Amherst.

MICHIGAN.—Michigan State Agricultural College, at Agricultural College.

MINNESOTA.—The University of Minnesota, at Minneapolis.

MISSISSIPPI.—Mississippi Agricultural and Mechanical College, at Agricultural College; Alcorn Agricultural and Mechanical College, at Westside.

MISSOURI.—College of Agriculture and Mechanic Arts of the University of the State of Missouri, at Jefferson City; Lincoln Institute, at Jefferson City.

MONTANA.—The College of Agriculture and Mechanic Arts, at Bozeman.

NEBRASKA.—The University of Nebraska, at Lincoln.

NEVADA.—Nevada State University, at Reno.

NEW HAMPSHIRE.—The New Hampshire College of Agriculture and the Mechanic Arts, at Durham.

NEW JERSEY.—Rutgers Scientific School (The New Jersey State College for the Benefit of Agriculture and the Mechanic Arts, at New Brunswick.)

NEW MEXICO.—The New Mexico College of Agriculture and Mechanic Arts, at Mesilla Park.

NEW YORK.—Cornell University, at Ithaca.

NORTH CAROLINA.—The North Carolina College of Agriculture and Mechanic Arts, at West Raleigh; The Agricultural and Mechanical College for the Colored Race, at Greensboro.

North Dakota.—North Dakota Agricultural College, at Fargo.

Ohio.—Ohio State University, at Columbus.

Oklahoma.—Oklahoma Agricultural and Mechanical College, at Stillwater.

Oregon.—State Agricultural College of Oregon, at Corvallis.

Pennsylvania.—The Pennsylvania State College, at State College.

Rhode Island.—Rhode Island College of Agriculture and Mechanic Arts, at Kingston.

South Carolina.—The Clemson Agricultural College, at Clemson College.

South Dakota.—South Dakota Agricultural College, at Brookings.

Tennessee.—University of Tennessee, at Knoxville.

Texas.—Agricultural and Mechanical College of Texas, at College Station; Prairie View State Normal School, at Prairie View.

Utah.—The Agricultural College of Utah, at Logan.

Vermont.—University of Vermont and State Agricultural College, at Burlington.

Virginia.—Virginia Polytechnic Institute (State Agricultural and Mechanical College), at Blacksburg; Hampton Normal and Agricultural College, at Hampton.

Washington.—Agricultural College and School of Science of the State of Washington, at Pullman.

West Virginia.—West Virginia University, at Morgantown; The West Virginia Colored Institute, at Farm.

Wisconsin.—University of Wisconsin, at Madison.

Wyoming.—University of Wyoming, at Laramie.

The pamphlet gives "value of permanent funds and equipment of land grant colleges, 1896," as exhibited on the next two pages.

Value of Permanent Funds and Equipment of Land-grant Colleges, 1896.

STATE.	Land-grant fund of 1862.	Other land-grant funds.	Other permanent funds.	Land-grant of 1862 still unsold.	Farm and grounds owned by the institution.	Buildings.	Apparatus.	Machinery.	Library.	Miscellaneous equipment.
Alabama (Auburn)	$253,500.00				$25,000 00	$137,000.00	$15,150.00	$15,560.00	$17,500.00	$21,000.00
Alabama (Normal)					10,000.00	20,000.00	1,000.00	1,200.00	1,250.00	1,000.00
Arizona					3,000.00	74,587.31	46,272.31		3,533.46	
Arkansas (Fayetteville)	130,000 00				9,600.00	227,000.00	15,000.00	5,000.00	7,000.00	25,000.00
Arkansas (Pine Bluff)					50,000.00		1,000.00	8,000.00	3,000.00	10,000.00
California	727,909.40	$149,092.99	$1,868,070.70	$31,799.80	1,082,082.00	646,792.94				365,000.00
Colorado	58,237.33			55,000.00	32,900.00	118,375.00	35,441.31	9,572.90	9,689.00	6,721.31
Connecticut		22,000.00			15,000.00	69,000.00	2,275.00		3,500.00	4,000.00
Delaware (Newark)	83,000.00				9,000.00	79,700.00	29,000.00	8,000.00	14,500.00	4,000.00
Delaware (Dover)					6,000.00	8,800.00	1,000.00	3,600.00		
Florida (Lake City)	9,107.00				7,635.00	33,973.50	6,305.66	2,292.35	5,066.50	8,202.10
Florida (Tallahasse)					7,105.00	15,000.00	2,500.00	1,500.00	852.82	
Georgia (Athens)	243,000.00				15,000.00	50,000.00	80,000.00	5,000.00	30,000.00	10,000.00
Idaho		5,589.26			10,000.00	125,000.00	25,000.00	7,500.00	4,000.00	1,000.00
Illinois	453,995.93			115,000.00	100,000.00	520,000.00	127,244.00	12,000.00	40,000.00	10,770.00
Indiana	340,000.00				70,000.00	325,000.00	98,000.00	115,000.00	12,000.00	
Iowa	597,653.52		83,400.00	65,870.60	27,000.00	386,000.00	119,994.30	25,000.00	18,000.00	
Kansas	502,561.55			720.00	47,660.00	210,875.00	72,895.79	29,611.33	36,168.38	14,144.02
Kentucky (Lexington)	165,000.00				275,000.00	130,000.00	29,000.00	20,000.00	5,000.00	4,000.00
Louisiana (Baton Rouge)	182,313.03	136,000.00			21,350.00					275,000.00
Louisiana (New Orleans)					22,000.00	44,034.00	2,927.36	3,880.77	1,500.00	5,567.00
Maine	118,300.00		100,000.00		9,325.00	191,566.00	23,675.00	20,000.00	17,000.00	
Maryland	115,943.00				28,600.00	71,000.00	21,000.00	10,000.00	5,000.00	
Massachusetts (Amherst)	219,000.00		141,575.35		45,000.00	228,915.00	17,500.00	500.00	17,080.00	7,500.00
Massachusetts (Boston)			650,000.00			535,000.00				200,000.00
Michigan	547,279.10			500,000.00	47,320.00	288,306.55	60,942.23	10,227.22	42,963.70	34,771.21
Minnesota	510,000.00	590,000.00		15,000.00	500,000.00	925,000.00	150,000.00	50,000.00	60,000.00	50,000.00
Mississippi (Agri'l College)	98,575.00				57,746.00	129,760.00	7,794.00	14,499.52	6,800.00	45,121.35
Mississippi (Westside)	113,375.00	10,000.00			2,500.00	8,500.00	2,000.00		4,549.50	
Missouri (Rolla)	80,500.00		129,391.67			69,000.00	22,000.00	1,500.00	6,300.00	1,600.00
Montana				225,000.00	12,000.00	110,000.00	5,000.00	5,000.00	5,000.00	2,000.00
Nebraska	61,955.15	19,565.63	72,510.00	143,234.00	15,000.00	395,000.00	37,950.00	29,500.00	50,000.00	25,000.00
Nevada	88,000.00	31,000.00		2,859.70	13,000.00	129,104.51	15,716.98	6,424.89	10,000.00	24,660.70
New Hampshire	80,000.00		36,000.00		18,000.00	175,331.00	18,000.00	12,026.00	8,500.00	6,474.00
New Jersey	116,000.00									
New Mexico					10,000.00	32,500.00	9,165.47	8,312.86	5,835.36	3,831.13

Value of Permanent Funds and Equipment of Land-grant Colleges, 1896. (*Continued.*)

STATE.	Land-grant fund of 1862.	Other land-grant funds.	Other permanent funds.	Land-grant of 1862 still unsold.	Farm and grounds owned by the institution.	Buildings.	Apparatus.	Machinery.	Library.	Miscellaneous equipment.
New York	$688,576.12	.....	$5,588,398.43	$155,000.00	$99,218.91	$1,623,916.79	.....	$217,389.13	$395,665.00	$408,406.22
No. Carolina (W. Raleigh)	.....	.....	.....	.....	19,500.00	72,554.49	.....	.....	2,000.00	.....
No. Carolina (Greensboro)	.....	.....	.....	.....	5,000.00	40,000.00	$5,000.00	1,800.00	600.00	1,500.00
North Dakota	.....	.....	.....	.....	25,000.00	82,500.00	8,000.00	2,500.00	7,500.00	5,600.00
Oklahoma	.....	.....	.....	.....	5,000.00	20,000.00	7,000.00	1,500.00	6,000.00	2,500.00
Oregon	132,430.00	.....	.....	.....	14,250.00	52,600.00	7,360.00	9,752.00	2,500.00	6,577.00
Pennsylvania	427,290.50	$89,709.50	.....	.....	80,000.00	600,000.00	100,000.00		20,000.00	.....
Rhode Island	50,000.00	.....	.....	.....	15,000.00	122,100.00	18,984.14	14,963.54	11,066.66	20,437.17
So. Carolina (Clemson Col.)	.....	.....	25,000.00	.....	.....	194,000.00	.....	50,000.00	3,000.00	2,000.00
So. Carolina (Orangeburg)	.....	.....	.....	.....	15,000.00	33,000.00	2,500.00	8,000.00	1,500.00	3,000.00
South Dakota	.....	.....	.....	.....	89,000.00	80,000.00	.....	.....	.....	.....
Tennessee	396,000.00	.....	24,000.00	.....	106,370.00	159,400.00	9,000.00	12,000.00	50,000.00	2,000.00
Texas (College Station)	209,000.00	.....	.....	.....	48,320.00	314,707.91	26,902.60		5,500.00	.....
Utah	.....	.....	.....	.....	26,800.00	157,308.00	27,500.00	10,000.00	5,700.00	4,000.00
Vermont	135,500.00	.....	251,000.00	.....	15,000.00	474,561.26	15,000.00	12,000.00	125,000.00	.....
Virginia (Blacksburg)	344,312.00	.....	.....	.....	30,000.00	139,000.00	30,000.00	30,000.00	2,500.00	500.00
Virginia (Hampton)	285,000.00	.....	459,578.04	.....	52,000.00	404,000.00	1,500.00	65,000.00	4,000.00	46,500.00
Washington	.....	.....	.....	.....	10,000.00	135,000.00	.....	.....	.....	.....
W. Virginia (Morgantown)	90,000.00	.....	24,750.00	.....	40,000.00	215,000.00	50,000.00	50,000.00	20,000.00	25,000.00
W. Virginia (Farm)	.....	.....	.....	.....	2,750.00	25,000.00	2,000.00	8,000.00	600.00	.....
Wisconsin	302,000.00	230,000.00	.....	.....	150,000.00	1,000,000.00	200,000.00	50,000.00	50,000.00	50,000.00
Wyoming	.....	.....	.....	900,000.00	3,270.00	100,000.00	10,000.00	10,000.00	5,000.00	3,000.00
Totals	$8,923,261.00	$1,282,955.00	$9,453,672.00	$2,209,482.00	$3,603,281.00	$12,558,860.00	$1,419,501.00	$1,055,607.00	$1,171,381.00	$4,250,381.00

It would seem that all the states have the agricultural colleges or schools with an average permanent investment already of more than a million dollars each.

Connecticut cannot afford to do less than keep pace with her sister states.

Nor yet has the whole story been told. We are just across the threshold of a condition of public affairs wherein the maintenance of the stability and prosperity of the entire agricultural community is of absolutely vital interest to the nation at large, and to the state of Connecticut as well, for a reason not yet suggested.

Rightfully or wrongfully as the case may be, we are at the beginning of a long, determined, and at times violent struggle which has for its aim a tremendous change in the final distribution of the earnings of labor and of capital. The demand of the agitators of the struggle is that the advantages due to invention and to improvements in production and transportation shall be made to inure to the benefit of all the people in equal part; that all shall have a like share in the natural resources of the earth and in all unearned increments of value; that all men shall have equality of opportunity irrespective of differing conditions of wealth and birth; that nothing savoring of monoply shall be permitted to exist; that each man shall have the largest possible share of the ultimate as well as immediate product of his labor; and that all this shall be brought about by laws as inflexible and all compelling as those which swing the earth in its mighty orbit. Such is the ideal—sometimes lacking in intelligent and coherent expression—which lies at the core of our labor disturbances and our present political tumults, notwithstanding some admixture of mere selfishness and ignoble discontent.

It needs no extra keenness of the vision to perceive the battle is already on and no gift of prophecy to foresee that it will increase rather than diminish in intensity for long years to come and that it is wholly probable that no man on earth will live to see the final solution.

The writer does not for an instant contemplate the utterance of any expression here of opinion as to what that final

result will be or what it ought to be. He is simply dealing now with the period of convulsion upon which we have entered as a mighty fact and with the relation of the agricultural community to that fact.

If Paris had really been France as its people have been fond of saying in the past, there would to-day be nothing left worthy of the name of France. Had it not been for the agricultural community of France that nation would have been torn into disjointed fragments long ago by the shifty and mercurial populace of Paris.

What probabilities of perpetuity would remain to our institutions if all the people of the United States were what the cities of New York and Chicago are? True it is that the great cities draw to themselves quite their share of men who are bright and strong but brightness and strength alone never yet saved a people or a nation from destruction and decay. The one element of character which, more than any other differentiates the English people from the old Romans, alike as they are in aptitude for war and terrestrial dominion, is conservatism—the taking of ample time to think a thing over before consenting to any change; it is the one element which has already given the English their larger permanence and success and it yet casts a long light adown their future.

It is that conservatism, tempered by intelligence, which American agriculturists are adapted to furnish for the long and uncertain struggle upon which we have entered. The importance of the preservation of this great conservative element cannot be over-estimated. It is to be the balance wheel of the whirl which at times is like to threaten the very existence of the Republic and even the duration of the social order in any form. A successful and peaceful issue of this struggle may not be possible without it.

This is one reason which, here in Connecticut, should give pause to the thoughtful men of the cities in any project to diminish the political power of the rural communities to the extent of enacting representation in the General Assembly in exact accordance with population. In this matter the men who have the good of the cities at heart are sure to find their ac-

count in fostering agriculture and maintaining the ranks of the farmers undiminished.

The drift of the young from farm to city is clear before all eyes; they like the labor which is turned into money at regular intervals; they like bath rooms, water closets and furnace heat; they like to be in social touch with their fellows, within easy reach of entertainments and they appreciate the passing show of city life with its apparently greater prizes. There are men and women for whom the first uncovering of the brown earth in spring, the early struggle of the grass to be green, the unfolding of the leaf, the white wonder of the apple blossoms, the grain billowing under the wind of June, the new mown hay in summer, the ripened corn of September, the leaves of October rich with the hues caught from all the sunsets of their lives, the starry heavens of the clear winter nights and the largeness of God's temple built over all more than compensate for what the cities have to offer. But some kinds of human nature are more common than some other kinds and the drift to the cities continues nevertheless.

For the nation's good and for the preservation of a powerful conservative force pending the settlement of the great questions with which America is now grappling, all practicable means for stopping this drift from country to city should be adopted. The advent of the bicycle and the trolley could not be more timely if it had been, as it may have been, the direct and immediate work of omniscience. The good-roads movement is a godsend in the same direction; and no man in city or country should hesitate in incurring whatever public debt may be necessary to convert all our chief highways into the best practicable condition. The farmers themselves should see to it that certain of the so-called "modern conveniences" are adopted in their homes. Bath rooms, water closets, and furnace or steam heat should be as common in the country as in the city. And when it comes to fostering agriculture and improving the attractiveness of rural life by diffusing an improved education among the farmers by the teaching of agriculture in a state institution, it is the height of absurdity to deal with the matter with other than a liberal hand in view of the gravity of the political results involved.

It is not an unknown proposition, here in Connecticut, that to maintain an agricultural college in each state involves the repeated duplication of the same kind and degree of research and experiment and that it would be a wiser expenditure of public moneys intended for the benefit of agriculture to gather together a great body of scientists at one place—Washington city for instance—where competent men, each group working by itself in a special line, should delve into the problems of agriculture, with no duplication of work, and be enabled to continuously make deeper and deeper progress into the secrets of nature.

It might almost as well be argued that the cause of education in general could be best furthered in the same way and that if we only had a big enough university at Washington, the little red school houses and the high schools of the villages and cities could be dispensed with. The very first object and purpose of the establishment of agricultural colleges in the several states is to disseminate agricultural education abroad and among all the people. For such a purpose as that—the first and highest purpose aimed at in the multiplication of the agricultural colleges—the supposed great body of agricultural scientists at Washington would be an impotent and helpless institution.

Such a great central institution for original and ever deepening research, by the most competent scientists to be found, ought to exist and the federal government ought to pay for it. There ought to be just such a purveyor of information whose discoveries should be delivered to the people by the local institutions, but as an instrument of general agricultural education itself and without the aid and instrumentality of the local agencies, it would have almost no practical value whatever.

Moreover the United States of America constitute a vast terrestrial empire embracing about every kind and shade of temperature, climate, soil and adaptability for crops. The range and variety in each of these matters is vast. Drainage is a matter of great interest along the valley of the Wabash as is irrigation in Arizona, but neither is of everlasting importance on the slopes of the Green Mountains. It would not be useful in any high degree to teach the agriculture of cotton and sugar

in Connecticut nor that of cranberries and herds-grass in Mississippi. For the observation and study of all these differing conditions and phenomena and for the teaching of agriculture adapted thereto, the chances are more than a hundred to one in favor of getting the better results from the many state colleges than from a single great federal institution. And still further, without the state colleges, the local lecture systems, and the extension courses referred to hereinafter—which possibly quite equal in value the immediate college work—would not be a possibility.

Again, it has been said that the teaching of agriculture, under the federal endowments and state appropriations, could be more economically and effectively accomplished by and at the institutions already long established of the ordinary college type. That proposition has already been carefully considered. A competent committee on education, appointed by the National Grange, made an investigation into this matter as regards the states generally a few years ago. They rendered their written report in 1892, and concluded with these words:

> "If these records show anything, they plainly show that thus far none of the Agricultural Colleges which is connected with a classical institution has been successful in imparting agricultural education, and a portion of them have been most dismal failures, while on the other hand, the independent Agricultural and Mechanical Colleges are, without exception, eminently successful."
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> "Prof. Atkinson, of West Virginia University, says: 'Industrial colleges, to succeed, must be managed by men who are known to be in sympathy with the people who are to be benefitted, and can never succeed as a side show to a classical institution any more than this progressive nineteenth century can live in the atmosphere of ancient Greece or Rome.'"

And thereupon this committee asked for a federal law separating the agricultural colleges from the classical institutions.

It may not be amiss to give here some idea of the work which Storrs' Agricultural College is trying to do. Under "Mathematics" it teaches arithmetic, bookkeeping, algebra, geometry, trigonometry and surveying. Under "Domestic Science" (for the young women) it teaches cooking, sewing, laundering, household economics, hygiene, sanitation and music. Under "Mechanical Arts" it teaches physics, free-hand drawing,

mechanical drawing, and the simpler forms of iron and wood working. As required by the federal law it teaches military tactics. Under "English" it teaches language, rhetoric, composition and elocution, with courses in English and American literature. Under "Agriculture" it teaches agriculture, botany, chemistry, entomology, geology, horticulture, physiology, veterinary science and zoology. Under what might be called "Citizenship" it teaches history, civil government, political economy and ethics. Practical instruction on the farm and in the orchard and garden goes hand in hand with teaching from text books.

Since the beginning of 1881 the college has had one thousand and sixty-eight students, and graduated one hundred and fifty-three.

The work of the college is not confined to the college buildings and grounds. About two years since it began to send out its professors and teachers to lecture before farmers' conventions, farmers' institutes and granges, the lectures being accompanied by stereopticon illustrations when practicable. The president of the college has one hundred and twenty-five of these lectures to his credit on entomology, geology, and the natural features of the Yellowstone Park; the professor of chemistry and physics has thirty-six of these lectures to his credit on "Western Scenery and Life," "What the Agricultural College Can Give a Farmer's Boy," "Beauty and Utility," "An Uplift in Rural Life," "Chemistry of Plant Life," "Agricultural Chemistry," "Chemistry of Carbon Compounds," "Climatology," "Home Studies for Rural People," and "Dietary and Food Economics;" the professor of agriculture has nineteen lectures to his credit on "The Dairy Cow and Her Products," "Forage Crops as Substitutes for Hay," "Soiling and Soiling Crops," "Feeding Dairy Stock," "Fertilizer Experiments" and "Dairy Education in Connecticut;" the professor of horticulture has ten lectures to his credit relating to his department, the professor of veterinary science six, and the teachers of domestic science eight—in all, two hundred and four lectures within about the time stated.

Then the college has an extension department, the work of which was begun in October, 1896, combining the correspondence-school idea with home studies and extension lecture courses, to which will be added the traveling library—this last a new

idea originating at Storrs. The object of this department is to provide home study along lines similar to those pursued at the college. The course of study covers two years, with examination papers, an annual commencement day, and the granting of certificates to all who satisfactorily complete the course of study laid down. Text books are furnished by the college at cost, the amount called for the first year being $2.40, and the second year a little more. At present the text books used in the men's course for the first year are: "First Principles of Agriculture," by Voorhees; "Practical Farm Chemistry," by Greiner; "Realm of Nature," Part 2, by Mill; "Story of the Plants," by Allen; and for the second year, "Principles of Fruit-Growing," by Bailey; or "Milk and its Products," by Wing; "The Spraying of Plants," by Lodeman, or "The Dairy Herd," U. S. Government; "Realm of Nature," Part 1, by Mill, and "The Story of Bacteria," by Conn. The books for the women's course in the first year are: "Home Floriculture," by Rexford; "Easiest Ways in Housekeeping and Cooking," by Helen Campbell; "Realm of Nature," Part 2, by Mill; "Story of the Plants," by Allen; and for the second year, "Household Economics," by Helen Campbell, or "The Way We Did at Cooking School," by Virginia Reed; "Health and How to Promote It," by McSherry; "Realm of Nature," Part 1, by Mill, and "The Story of Germ Life," by Conn. The record of the first year's operation of the extension department shows a total enrollment of two hundred and sixteen members, of whom about seventy-five remain in the second year. The membership for the second year is probably larger than for the first. At the time of preparing this paper it was too early to speak positively about that matter. The bulk of the entries naturally come in midwinter.

The friends of Storrs Agricultural College are willing that it shall be judged by this record without the making of any allowances whatever. But the path so far trodden has not been a plain and easy one. The college had before it no standard example, of long success, suited to Connecticut conditions, after which it might easily pattern, wherefore it has had to blaze its way, in some substantial part, both as to methods and studies.

Again, the world has an abundance of men fitted by education, inherited temperament and training to fill the chairs of

instruction in colleges of the ordinary type but this has not been the fact with regard to agricultural colleges—comparatively new as they are—which need not men of lesser attainments than those fitted for ordinary college professorships but men of greater attainments. To place an agricultural college on the plane of full efficiency the special studies which its instructors teach need to be based upon a broad foundation of general education and culture.

Still again it is no secret that Storrs has been sorely hampered for funds. Its struggles in the legislature and in the courts are pretty well known and read of all men at least in Connecticut. Specific and detailed reference thereto has been omitted in this paper, not out of consideration for Storrs, but out of consideration for others.

While—as we look at it—a good beginning has been made at Storrs, its friends look to it for higher things than it has yet accomplished.

The ideal these friends set for it comprehends the teaching of the merely mechanical operations of agriculture and the transaction of the business operations connected therewith, as a matter of course, drill in the use of the English language till it becomes an instrument of clear and facile expression; and the grounding of the students in such historical, economic and political knowledge as tends to intelligent and virile citizenship. On this as a basis it means to impart such a scientific knowledge of agriculture, in the full and broad meaning of those words, that its diploma will justly take full and equal rank with those of the universities in indicating the training and energizing of the perceptive and reasoning faculties—sending out its graduates not only to sweeten and dignify agriculture in its daily life but fully equipped to wrest from nature by research, by thought and by invention, secrets which shall arm agriculture with dominion over the germination and growth of plants and animals akin in god-like power to man's mastery over steam, electricity and the Roentgen Ray.

The facts of the situation justify the farmers in standing as one man for the progressive and continuous development of the State Agricultural Colleges, secure in the position that what-

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ever of immediate good may come to agriculture the vaster good will inure to the whole public and that in the not distant future that public will thank the courage, the wisdom and the foresight which persist to the attainment of full, abundant and complete success.

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